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Article

Utilization of Seamless Learning as a Learning Model during Covid-19 Pandemic in Indonesia

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KEYWORDS

Seamless Learning
 COVID-19
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A B S T R A C T

One of the effects of the 2019-20 Coronavirus pandemic is relied on education throughout the world. Education in Indonesia is also affected by the COVID-19 virus. All levels of education from elementary schools to tertiary institutions (universities) both under the Indonesian Ministry of Education and Culture and those under the Indonesian Ministry of Religion are "forced" to learn from home because of face-to-face learning removed to prevent COVID-19 transmission. Under these conditions, the education system can adopt Seamless Learning. Seamless Learning allows students to determine when and where they will learn. This research is a literature study reviewing studies which show that Seamless can now be done to replace traditional systems during pandemic. Seamless Learning can be an option for learning methods that can be applied during the COVID-19 quarantine period. Seamless Learning allows students to learn more independently and does not sacrifice students with certain hours and duration as long as the material is affordable and accessible to students. Students can easily access material and are not limited by certain devices making it easier for students who do not have a computer or laptop.

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INTRODUCTION

A general education system in Indonesia is based on compulsory programs for all citizens. Children start in preschool education at the age of five. Then at the age of seven, they study is at the elementary level for six years. They continue to middle school; junior high school from seven to ninth grades, then senior high school from tenth until twelve grades is mandatory for everyone. The expected years of schooling in Indonesia are 12 years.

The education system in Indonesia is based on traditional and modern classrooms. Traditional teaching system uses books and blackboards as teaching equipment while a modern classroom is equipped with whiteboards, projectors or audio-visual display equipment and digital boards. However, both systems require students to attend school classes every day. In the education system in Indonesia, every student is required to go to school every day. In general, students must go to school from Monday to Friday. School hours are regulated by Permendikbud Number 23 of 2017 concerning School Days, namely the number of days and hours used by teachers, education

personnel, and students in organizing education in schools. School Day is carried out 8 (eight) hours in 1 (one) day or 40 (forty) hours for 5 (five) days in 1 (one) week.

On December 31, 2019, the medical authorities in Wuhan then reported the finding of unusual pneumonia to WHO. Only four weeks later, on January 26, 2020, a new type of Coronavirus (a Coronavirus Novel) was identified and announced to the public (McCloskey and Heymann, 2020). A new type of Coronavirus is then called COVID-19. COVID-19 is an infectious disease caused by acute Coronavirus 2 (severe acute respiratory Coronavirus 2) or SARS-CoV-2 respiratory syndrome. This virus is a large family of Coronavirus that can attack animals. When attacking humans, Coronavirus usually causes respiratory infections, such as flu, MERS (Middle East Respiratory Syndrome), and SARS (Severe Acute Respiratory Syndrome).

COVID-19 was named Coronavirus Disease-2019 which was shortened to COVID-19. COVID-19 has since been found to be widespread to the extent that it has resulted in a global pandemic that continues to this day. Symptoms of COVID-19 generally include 38° C fever, dry cough, and shortness of breath and the worst effect for humans is death. Until April 19, 2020 at 10:38:37 IWST, there were reported 2,329,539 confirmed cases from 185 countries of which 160,717 people died and 595,229 people could be cured (Johns Hopkins CSSE, 2020).

From Wuhan, COVID-19 continues to spread throughout the world, until on March 11, 2020, WHO officially declared COVID-19 a pandemic. Indonesia itself has not escaped the spread of COVID-19. As of March 2, 2020, the first two cases of COVID-19 entered Indonesia. In just three weeks, until March 25, 2020, there were 790 cases in Indonesia. This shows that COVID-19 spreads so fast in Indonesia (Tahrus, 2020).

One of the effects of the 2019-20 Coronavirus pandemic is on education throughout the world, which is leading to the widespread closure of schools, madrassas, universities and boarding schools. UNESCO (United Nations Educational, Scientific and Cultural Organization) on 4 March 2020 recommended the use of distance learning and opened an educational platform that schools and teachers could use to reach students from a distance and limit education disruptions (UNESCO, 2020). In connection with these developments, the Ministry of Education and Culture (KEMENDIKBUD) also took policies as a guide in dealing with the disease at the education unit level. Globally, the results of UNESCO's monitoring show that there are at least 290.5 million students worldwide whose learning activities have been

disrupted due to schools being closed. At the tertiary level of the United States, the corona virus outbreak also shows its intervention. Because of COVID-19, international student exchange programs must be stopped (UNESCO, 2020).

Thirteen countries including China, Italy and Japan have closed schools across the country in an effort to stop the spread of the flu-like virus. A number of schools in the United States have canceled classes due to the corona virus. Among them are Mariner High School and Discovery Elementary School, located in the state of Washington, which have seen a sharp increase in confirmed cases. The State of New York and the City of New York have also closed several schools after health officials confirmed at least 22 cases throughout the state. While in Los Angeles, when declaring a state of emergency on Wednesday, the government told parents that school closure was a possibility and should be prepared.

Education in Indonesia is also affected by the COVID-19 virus. The government announced the National Examination (UN) this year was officially abolished. Starting from the level of elementary school (SD) to the level of high school (SMA), the government has abolished the National Examination (UN) for 2020. Covid-19 affects not only primary (Elementary and Madrasah Ibtidaiyah Level) and secondary schools (Middle school/ Tsanawiyah and High school/ Aliyah) but also tertiary institutions (Universities). All levels of educational institutions under the Indonesian Ministry of Education and Culture (KEMENDIKBUD) and Indonesian Ministry of Religion (KEMENAG) experience negative impacts because students are "forced" to learn from home since face-to-face learning is removed to prevent COVID-19 transmission.

Under these conditions, the education system can adopt Seamless Learning. Seamless Learning allows students to determine when and where they will learn. Besides, the desire or emotional mood to learn can be carried out anytime and anywhere. So when this occurs, students need to be accommodated so that they can learn immediately, including the provision of learning resources, learning media and learning environments. These conditions allow students to learn with a variety of scenarios, the learning process can occur in formal or in informal conditions, in the classroom or outside the classroom, individual or social, digital or non-digital media, as well as the physical environment or virtual environment.

Renz, et. al. (2016) define the continuity of learning with various scenarios, known as Seamless Learning. They have used the term Seamless Learning for all activities marked by continuity of learning experiences through different learning contexts using mobile and ubiquitous technology, in this case mobile devices such as smartphones play an important role in Seamless Learning. Basically in Seamless Learning, students are given the opportunity to collaborate and to interact in various ways with peers, learning resources and the real world (physical world), in addition to that interaction is also done through the virtual worlds.

Many researches about learning only focus on one aspect of educational form; formal or informal, and have not been successful in combining the synergistic relationship between them (Sharples, 2006). Therefore, in the interaction between learners, learners and learning resources, learners and the learning environment in terms of the synergy relationship between learning in the real world and the virtual world, the proper design is needed for the transition between scenarios and learning contexts. This research discusses the concept and the design of Seamless Learning using flexible mobile technology that can be used to overcome educational problems during the COVID-19 pandemic quarantine. This research is a literature study reviewing studies which show that Seamless can now be done to replace traditional systems during a pandemic.

METHOD

This research employed the research approach in the form of Library Studies (Library Research). Literature study is a study that is used to gather information and data with the help of various materials available in the library such as documents, books, and magazines. Literature studies can also study various reference books as well as the results of previous similar studies that are useful to get a theoretical basis on the problem to be studied (Sarwono, 2006). Meanwhile, according to other experts, literature study is a theoretical study, references and other scientific literature relating to culture, values and norms that develop in the social situation under study (Sugiyono, 2012). Data sources that will be used as the material for this research are books, journals and internet sites related to the chosen topic.

RESULTS AND DISCUSSION

1. Development of Seamless Learning

With the coming of the 21st century, scholars in the emerging field of learning have begun to snap to the notion of Seamless Learning and to coin the term in the relevant literature (e.g., Rohloff, et. al., 2018), with a greater focus on technological innovation to enable

specific personalized learning activities across spaces. This development of learning will influence the nature, the process and the outcomes of learning. It happens because Seamless Learning enables students to choose their way of learning. They can choose the materials they are curious and switch the materials between different context such as between formal and informal contexts and between individual and social learning. Students can also extend their social spaces that enable them to interact with each other. Seamless learning or MSL has been loosely referred to by some literature as a learning *theory*. However, just like inquiry learning and m-learning, Seamless Learning should instead be seen as a learning notion or a learning approach at least till it is convincingly theorized.

2. Mobile Seamless Learning as Learning Innovation

The impact of technological developments change paradigms in education, develop learning outside the context of traditional learning in general. Hence, that makes the challenge of education in this digital age is no longer focused solely on what content will be learned but has evolved into how and when learning occur. Teaching and learning are no longer limited to a fixed space in a fixed time, but learning can occur anytime and anywhere without being bound by time and space. The existence of mobile devices such as smartphones supports learning outside this context.

According to Wong and Looi (2012), the portability and flexibility of mobile device have the potential to support the transition of pedagogy from teacher-centered learning to learner-centered learning. In this case, educators are no longer the only source of learning, but educators act as facilitators and partners in learning.

Rogers and Price (2009) suggest several advantages of using mobile technology in implementing Seamless Learning, namely: can increase students' motivation; increase students' participation in learning activities and develop students' social and cognitive processes; open students' insight into various forms of information. They concluded that there were three challenges in designing a Seamless Learning by using mobile technology, namely: 1) avoiding excessive information, 2) avoiding unnecessary aspects that could cause the focus of students' attention to be distracted by the device, 3) supporting students' collaboration by understanding the obstacles that are often social interactions.

It is important to understand how the process of social interaction can give an impact to the situation of collaborative learning of Seamless Learning scenario. The socio-affective process becomes increasingly important when different physical and social learning environment

constraints occur in different contexts, places and times. In essence, how educators can increase the involvement of students or students in complex social interactions by using various types of equipment including digital and non-digital in increasing learning activities.

3. Not Getting Used of Seamless Learning Makes Learning Process Stuck During COVID-19 Quarantine

Some of the impacts felt by students on teaching and learning at home are students feel forced to learn distance without adequate facilities and infrastructure at home. This facility is very important for the smooth teaching and learning process, for online learning at home it should first be provided facilities such as laptops, computers or mobile phones that will make students easier to listen to the teaching and learning process online. The next obstacle is that students do not have a distance learning culture because all this time the learning system is implemented through face to face, students are accustomed to being in school to interact with their friends, play and joke with their friends and face to face with their teachers, with Far Learning methods make students need time to adapt and they face new changes that will indirectly affect their absorption.

The existence of the COVID-19 outbreak forces students to use certain technologies that need stable internet access. Each school prepares a distance learning tool and system and provides technical guidance to teachers in order to be able to use modern technology in learning to improve the quality of students in primary schools. Children still need parental assistance to assist learning at home, at least to prepare technology before and after online learning takes place so students can take part in online learning. Thus, the support and cooperation of parents for the success of learning is needed. In addition, in online learning at this time, there is no clear system and students are required to use certain applications that still require students to be in front of their laptops or devices at certain times just like when learning in class. Such learning makes students unable to learn freely and instead makes students get bored.

4. Seamless Learning Ensures Study Without Boundaries

Unlike online learning where the application is without a clear framework, Seamless Learning means that “students can learn whenever they are curious in a variety of scenarios and that they can switch from one scenario to another easily and quickly using the personal device as a mediator”. These scenarios include students learning individually or in groups, either face-to-face or online. Students can easily move between real and virtual learning locations such as home, bus, libraries, and VLE.

These learning scenarios can also be supported by teachers, mentors, professionals, family members and other communities. Seamless Learning can be both intentional, such as starting a learning activity in class and then continuing online at home, or incidental, such as when television content or news sparks a discussion (Milrad, et. al., 2013).

The concept of Seamless Learning can be considered to be similar to the notion of situated learning, which involves the “application of knowledge and skills to specific contexts”, such as learners completing courses while working or in their own spaces and applying what they learn at the same time (Ally and Prieto-Blázquez, 2014). However, Seamless Learning enables situated learning to be applied across situations. Seamless Learning should be seen as an aspiration, rather than a collection of resources and activities.

In addition, Seamless Learning is supported by multi devices and is not depending on one kind of devices. An earlier characterization of Seamless Learning spaces referred to the collection of the various learning scenarios supported by one-to-one technology (Ally & Prieto-Blázquez, 2014). One-to-one technology-enhanced learning means that a student uses at least one computing device for learning. However, one-to-technologies has now become many-to-many technologies. Therefore, a more relevant definition of Seamless Learning is that Seamless Learning is when a person experiences a continuity of learning, and consciously bridges the multifaceted learning efforts, across a combination of locations, times, technologies or social settings.

5. Learning Success Key Using Seamless Learning

The success of the learning process by using Seamless Learning cannot be separated from the main principles of Seamless Learning which consists of 10 dimensions (Wong and Looi, 2012).

a. MSL1: includes formal and informal learning

Seamless learning bridges or connects formal and informal ways of learning that make it possible to train the independence of student’s learning. Education conducted in classrooms or in formal laboratories can be continued and brought to the personal domain where learning becomes informal according to the needs and desires of students. This can foster the independence and motivation of students in learning.

b. MSL2: includes learning that is personal or personal and social

Seamless learning combined with mobile devices also allows students to obtain information through social interaction. Learning is not only centered on individuals, but the formation of science is based on interactions that

occur in social space (Siemens, 2005; Marco, et. al., 2015).

c. MSL3: learning that is across over time

With the diffusion of technology, the notions of place, time and space for learning have changed. The latest technologies result in paradigm shifts regarding learning. Mobile learning brings along a shift from being able to learn online, from a fixed computer location, to being able to learn anytime and anywhere with a mobile device, or by being mobile. This is in turn enriched with mobile affordances as well such as augmented learning and just-in-time learning. Seamless Learning is used to describe learning in various environments across time and location seamlessly through the use of the technology as a mediating tool. This learning can take place across time and location.

d. MSL4: learning that occurs by crossing locations

With the diffusion of technology, the notions of place, time and space for learning have changed. The latest technologies result in paradigm shifts regarding learning (Renz, et. al., 2016). Mobile learning brings along a shift from being able to learn online, from a fixed computer location, to being able to learn anytime and anywhere with a mobile device, or by being mobile. This is in turn enriched with mobile affordances as well such as augmented learning and just-in-time learning. Seamless Learning is used to describe learning in various environments across time and location seamlessly through the use of the technology as a mediating tool. This learning which can take place across time and location (de Waard, et. al., 2011).

e. MSL 5: access to ubiquitous knowledge

Seamless Learning is a combination of context-aware learning, augmented reality learning, and ubiquitous access to online or online-based learning resources). At present the educational and training world is moving towards an increased use of Cloud computing enabling students to carry out their learning with ease, and in collaboration with other learners, by accessing learning resources (Hwang, Wu and Ke, 2011). Seamless Learning surpasses time and space as all the resources are centralized in the cloud, accessible for those who are interested in life-long learning and technologically able to access those resources (de Waard, et. al., 2011). Ozdamli (2013) offers a very interesting view on the effectiveness of the Cloud for developing positive Seamless Learning perceptions.

f. MSL6: covers the digital and non-digital world

Kukulska-Hulme, et. al. (2009) writes that moving the focus away from the mobile technology and towards the social practice it enables, allows for a different

conceptualization of mobile learning and they conclude that researchers in mobile and ubiquitous learning will be keen to tackle the new challenges arising from learner activity across multiple virtual and physical contexts, linking the different contexts to formal as well as informal learning. The expansion of the physical worlds to include the digital worlds is an interesting point for seamless learning researchers, as many of them refer to incorporating family members and peers, teachers in real life situations to strengthen the digital content (Ozdamli, 2013; Wong, 2013).

g. MSL7: Combines the use of various types of devices

There is another factor to learn across multiple contexts, which is the technological learner experience as she or he moves between these settings by using multiple devices. A term does exist for switching between contexts in a fluent way and is described in the mobile seamless learning framework by Wong and Looi (2012). They describe the importance of switching between devices and contexts without losing focus or losing time finding where one left off as a learner, and how this is a necessary factor for a fluid learning experience. de Waard (2013) shared that: if a course is accessible for a multitude of devices, it affects (the need for) digital skills, because multiple devices have multiple characteristics and affordances. In order for the learner to learn, she or he must be able to successfully tackle these challenges that affect their learning. As such the use of multiple devices brings along challenges for the learner with regard to their contexts (Song and Hill, 2007; Vavoula, O'Malley and Taylor, 2005), as well as their mobile skills (Song and Fox, 2005), and these skills have a bearing on the actual Seamless Learning. As a related note, multiple devices also mean that the instructional design end of the MOOC becomes slightly more complicated for the designers and facilitators. Thus this aspect of MSL affects not just learning, but also teaching.

h. MSL8: Seamless and fast switching between several learning tasks

It is clear that learning activities must be tailored to meet Seamless Learning realities. These include offering accessible learning activities, providing moments to share what is learned, and creating formal and informal learning options (Sharples, et. al., 2015). Within the area of inquiry on MOOCs there is a wide field to explore regarding Seamless Learning activities based upon, or adding to, the mobile Seamless Learning in-class and out-class.

i. MSL9: synthetic knowledge

In open, Seamless Learning spaces, learning can take place not only in private spaces individually, but also in

public spaces collaboratively (Sharples, 2006; Looi, et al., 2012). The possibility for individuals to create knowledge and to share it online replaces the old classroom exchange where the teacher knows something and transmits it, and the learner in turn absorbs it. The learner becomes an ever more important actor in the overall process of learning and teaching.

j. MSL 10: includes multiple pedagogical or learning activity models

The mobile-based Seamless Learning projects focus on the teacher's ability to introduce what is learned outside of class inside of class activities. This can be paralleled or broadened for MOOC, as it could be good practice to introduce the informal content shares of individual, or collaborative, MOOC participants and provide it as a basis for subsequent learner activities inside the MOOC. This flexibility in adjusting learner activities is highly dependent not only the willingness of the instructor or facilitator to keep an open mind, vis-à-vis their curriculum or course activities, but also to be willing to leave some openness to the overall course roll out (Uosaki et al., 2013; Brady, et al., 2018).

Learning activities in MOOC must stimulate informal learning. In order to do this, it is important that the learning activities for a massive amount of participants be made generic, and at the same time stimulating learners to link them to their own professional contexts or interests (de Waard, 2013). Real life learning is also reflected in experiential learning. Experiential learning was proposed by Dewey (1938) that allows the learner to learn by actual doing, providing a much deeper learning experience. This is picked up in mLearning projects to encourage students to learn in naturalistic settings for developing context-specific competencies.

CONCLUSION

Seamless Learning can be an option for learning methods that can be applied during the COVID-19 quarantine period. Seamless Learning allows students to learn more independently and does not sacrifice students with certain hours and duration as long as the material is affordable and accessible to students. Students can easily access material and are not limited by certain devices making it easier for students who do not have a computer or laptop. The type of technology used in Seamless Learning can also be adjusted to the needs and the abilities of students.

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